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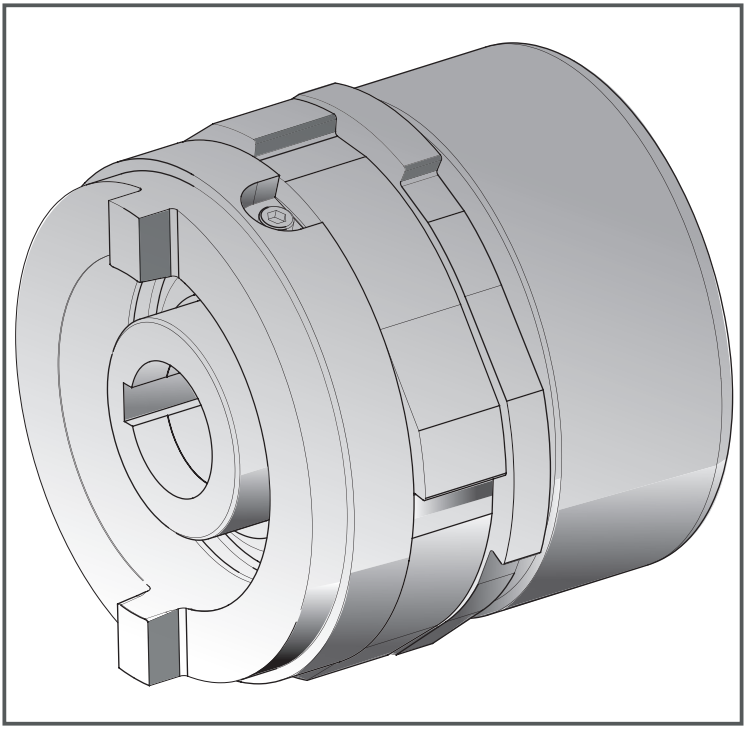
WALTERSCHEID

REPARATURANLEITUNG
REPAIR INSTRUCTIONS
IMANUEL DE RÉPARATION

KUGELSCHALTKUPPLUNG
BALL-TYPE CUT-OUT CLUTCH
LIMITEUR DÉBRAYABLE À BILLES

EK62/2S-L



WALTERSCHEID POWERTRAIN GROUP

Walterscheid GmbH | Hauptstraße 150 | D-53797 Lohmar
Tel.: +49 2246 12-0 | Fax: +49 2246 12-3501
www.walterscheid.com

IDENTIFICATION DATA

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Identification Data

Enter the identification data of your ball-type cut-out clutch here. You can find the identification data on the clutch housing.

Type: _____

Serial No.: _____

Year built: _____

Torque: _____

Manufacturer‘s Address

WALTERSCHEID GmbH

Street: Hauptstrasse 150

Town: D-53797 Lohmar, Germany

Tel.: + 49 (0) 22 46 12 - 0

Fax: + 49 (0) 22 46 12 - 35 01

Internet: http://www.walterscheid.com

About these Repair Instructions

Creation date: May 2015

Printed in Germany

Read and observe these Repair Instructions before starting repair work!

Retain for future reference!

FOREWORD

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Important Note

These Repair Instructions are intended exclusively for use by trained personnel in agritechnical engineering and in agricultural machinery workshops.

The content of this manual is not all-embracing and not legally binding.
Walterscheid GmbH accepts no liability for the results of its use. None of the information contained in this manual constitutes either warranted product characteristics or a guarantee. Walterscheid GmbH reserves the right to make technical changes without notice.

We accept no liability for the use of incorrect or unsuitable components on the product, or for failure to perform suitable tests following product servicing. Use the correct spare-parts documentation when purchasing spares. Always use only original spare parts from Walterscheid GmbH for repairs.

The original German version of this manual applies in the event of contradictory translated versions.

Any handover of the device to third parties must also make provision for handover of the present manual. Otherwise, the purchaser automatically loses any right to a warranty, where applicable. Should the device be transferred to third parties in a country speaking a different language, it is the responsibility of the original buyer to supply an accurate translation of the present manual into the language of the country where the device will be used.

Should individual provisions of this disclaimer be incompatible with the current legal provisions, this shall not affect the remaining provisions of these Repair Instructions.

User Assessment

Dear User,
Our Repair Instructions are updated regularly. By making suggestions for improvements, you can help us to further improve the user-friendliness of our Repair Instructions. Kindly send your suggestions by fax or e-mail to:

WALTERSCHEID GmbH
Street: Hauptstrasse 150
Town: D-53797 Lohmar, Germany
Tel.: + 49 (0) 22 46 12 - 0
Fax: + 49 (0) 22 46 12 - 35 01

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CONTENTS

1. Notes for Users

The chapter „Notes for Users“ provides information on how to use the Repair Instructions.

1.1 Purpose of the Document

These Repair Instructions:
- Describe the steps involved in repairing the ball-type cut-out clutch,
- Provide important notes regarding safe and efficient handling of repairs on the ball-type cut-out clutch,
- Must be retained for future reference.

1.2 Presentations Used

Instructions for action and reactions

Instructions for action and reactions
Activities to be performed by the operator are presented as numbered instructions for action. Adhere to the order of the given instructions for action. The reaction to the respective instruction for action is marked by an arrow, where appropriate. Example:

1. Instruction for action 1

→ Reaction of the ball-type cut-out clutch to Instruction for action 1

2. Instruction for action 2

Lists

Lists with no compulsory order are presented as lists with bullet points. Example:
- Point 1
- Point 2

Item Nos. in illustrations

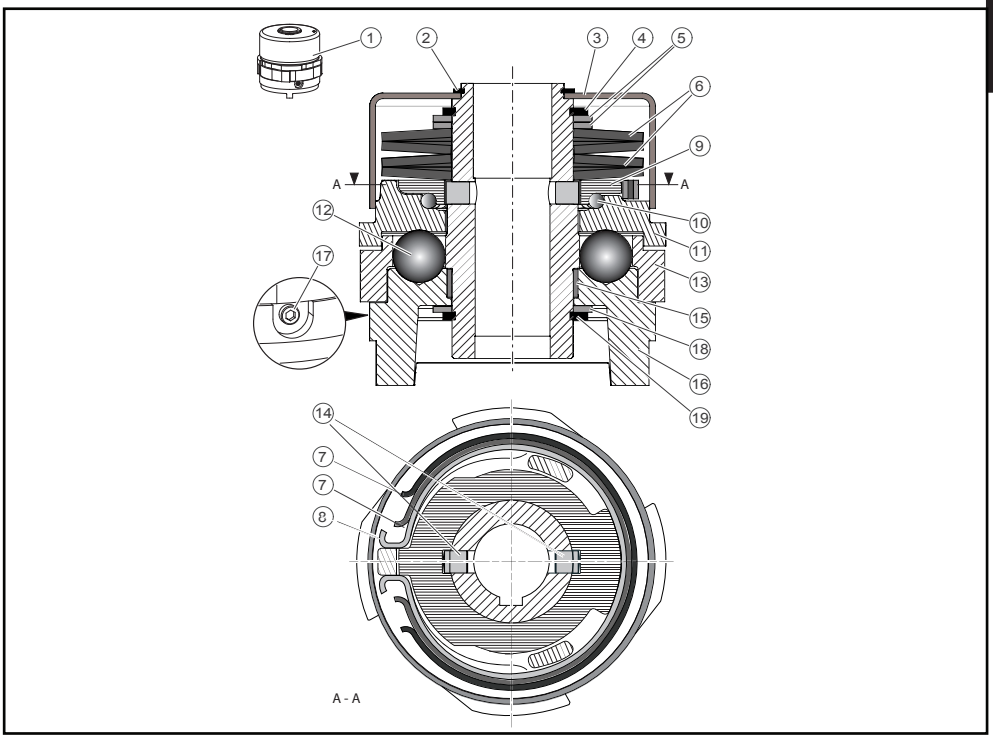
Numbers in parentheses refer to Item Nos. in drawings. The number refers to the Item No. in the drawing. Example: (3)
- Item 3

1.3 Definitions

The term ...	Denotes ...
Third person	… All persons other than the operator.
Operator	… The person who operates the clutch or the technical system in which the clutch is integrated, personnel who are familiar with the operating and maintenance procedures for the device, and particularly with the content of these Repair Instructions, have undergone training qualifying them to act in accordance with safety standards with an eye to potential risks, and are trained regarding personal protective equipment and basic First Aid measures.
Hazard	… The source of a potential injury or damage to health.
Manufacturer	… Messrs. WALTERSCHEID GmbH.

2. Overview of Assemblies

Illustration of the K62/2S-L ball-type cut-out clutch and designation of the main elements.



(1) Clutch assembly
(2) Retaining ring
(3) Safety cover
(4) Retaining ring
(5) Supporting ring
(6) Plate spring
(7) Outer shifting spring
(8) Inner shifting spring
(9) Shifting ring
(10) Ball
(11) Shifting plate
(12) Ball
(13) Hub
(14) Bolt
(15) Ring
(16) Drive plate
(17) Socket head cap screw
(18) Supporting ring
(19) Retaining ring

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3. Safety Notes

3.1 Organisational Measures

The Repair Instructions:

- Must be freely accessible to operators and maintenance personnel at all times and be handed over to the buyer if the clutch is re-sold.

3.1.1 Obligations of the Operator

The operator is obliged:

- To observe the generally applicable, national regulations on industrial health and safety, accident prevention and environmental protection,
- Only to allow persons to work with/on the ball-type cut-out clutch who
  - Are familiar with the fundamental regulations concerning industrial health and safety and accident prevention,
  - Have been instructed regarding work with/on the ball-type cut-out clutch,
  - Have read and understood these Repair Instructions,
- To keep all warnings on the ball-type cut-out clutch in legible condition,
- To replace damaged warnings,
- To provide suitable personal protective equipment, e.g.
  - Safety goggles,
  - Work gloves according to DIN EN 388,
  - Safety shoes,
  - Skin protection agents, etc.
- Use only original parts, or conversion parts and accessories approved by the manufacturer, so that
  - Faultless operation of the ball-type cut-out clutch is ensured.
- The manufacturer accepts no liability for damage caused by
  - Unauthorised modification of the ball-type cut-out clutch,
  - Non-approved conversion parts and accessories.

3.1.2 Spare Parts, Wear Parts and Supplies

Immediately replace components that are not in perfect condition.
When doing so, use only original parts from the manufacturer, or spare parts, wear parts and supplies approved by the manufacturer. When using spare parts and wear parts from third-party manufacturers, or supplies not approved by the manufacturer, it is not guaranteed that they are designed and produced to comply with the applicable stress and safety requirements.
The manufacturer accepts no liability for damage caused by the use of non-approved spare parts, wear parts or supplies.

3.1.3 Warranty and Liability

Our „General Terms and Conditions of Sale and Delivery“ fundamentally apply. They were handed over to the operator at the time of contract conclusion, at the latest.
Warranty and liability claims for personal injury and property damage are excluded if they are attributable to one or more of the following causes:

- Use of components of the ball-type cut-out clutch other than for the intended purpose,
- Improper repair, assembly, commissioning and mainte nance of the ball-type cut-out clutch,
- Failure to comply with the notes in the Repair Instructions regarding order, procedures and workflows,
- Failure to comply with, or disregard for, country-specific guidelines and regulations,
- Structural modifications to the ball-type cut-out clutch without the approval of the manufacturer,
- Inadequate monitoring of components subject to wear,
- Incorrect performance of repairs,
- Extraordinary occurrences, such as catastrophic events due to the effect of foreign bodies and force majeure.

3.2 Fundamental Safety Notes

Fundamental safety notes are:

- Generally applicable to the safety-oriented operation of the ball-type cut-out clutch,
- Summarised in the following sub-chapters.

3.2.1 General Notes on Safety and Accident Prevention

- Pay attention not only to the safety notes in this chapter, but also to the generally applicable, national safety and accident prevention regulations!
- Wear your personal protective equipment when working on the ball-type cut-out clutch!
- Pay attention not only to the fundamental safety notes in this chapter, but also to the action-related safety notes in the other chapters!

3.3 Action-Related Safety Notes and Important Information

The Repair Instructions contain action-related safety notes and important information. Signal words and symbols make it possible to recognise action-related safety notes and important information at a glance.

3.3.1 Action-Related Safety Notes

Action-related safety notes:

- Warn against residual risks that can occur in a particular situation or in connection with certain behaviour,
- Appear directly before a potentially dangerous activity in the individual chapters,
- Are identified by the triangular safety symbol and a preceding signal word. The signal word describes the seriousness of the impending hazard.

SAFETY NOTES

DANGER

DANGER
identifies an immediate hazard with a high risk that can result in extremely severe injury (loss of limbs or permanent damage) or death if not avoided.
Failure to observe safety notes marked „DANGER“ involves an immediate threat of extremely severe injury, possibly resulting in death.

WARNING

WARNING
identifies a potential hazard with a moderate risk that can result in extremely severe injury or death if not avoided.
Failure to observe safety notes marked „WARNING“ can potentially involve a threat of extremely severe injury, possibly resulting in death.

CAUTION

CAUTION
identifies a potential hazard with a low risk that can result in slight or moderately severe injury or property damage if not avoided.
Failure to observe safety notes marked „CAUTION“ can potentially involve a threat of slight or moderately severe injury or property damage.

3.3.2 Important Information

Important information:

- Provides notes on appropriate handling of the ball-type cut-out clutch,
- Gives tips on optimum use of the ball-type cut-out clutch,
- Is identified by the symbols below.

IMPORTANT

identifies an obligation to act in a particular way or perform a particular activity to ensure proper handling of the ball-type cut-out clutch.
Failure to observe these notes can result in problems with the ball-type cut-out clutch or in the environment.

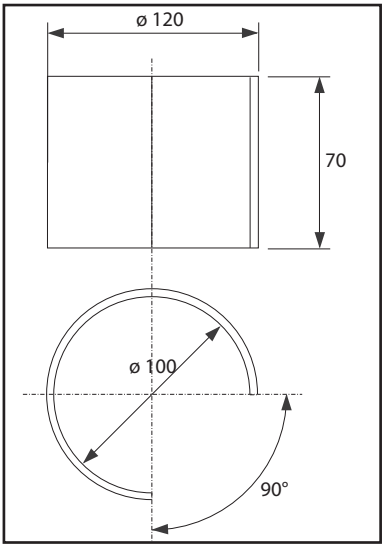
NOTE

identifies tips on use and particularly helpful information. These notes help you to make optimum use of all the functions of your ball-type cut-out clutch.

4. Tools

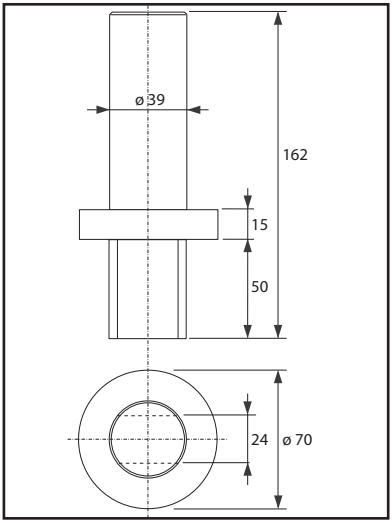
4.1 Sleeve

H



4.2 Clamp arbor

A



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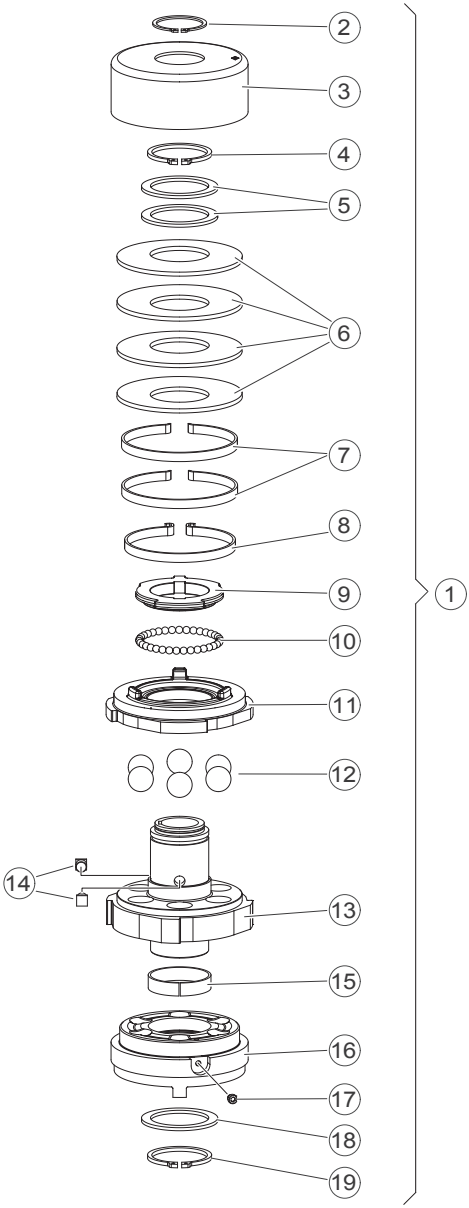
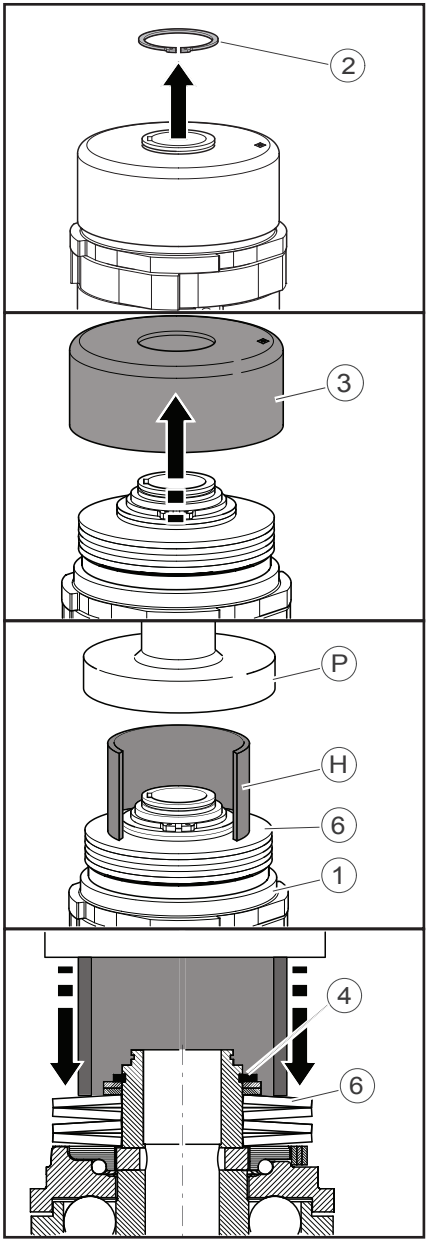
5. DISMANTLING AND ASSEMBLY INSTRUCTIONS



1	Cut-out clutch assembly
2	Retaining ring
3	Safety cover
4	Retaining ring
5	Supporting ring
6	Plate spring
7	Shifting spring
8	Shifting spring
9	Shifting ring
10	Ball
11	Shifting plate
12	Ball
13	Hub
14	Headed bolt
15	Ring
16	Drive plate
17	Hexagon socket head cap screw
18	Supporting ring
19	Retaining ring

5.1 DISMANTLING



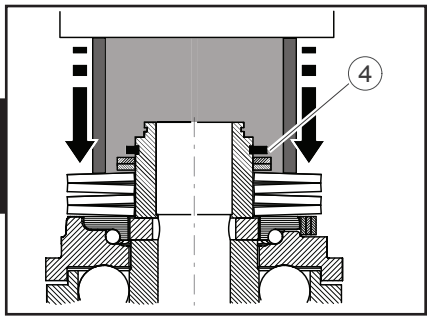
Remove the retaining ring (2).

Lift off the safety cover (22).

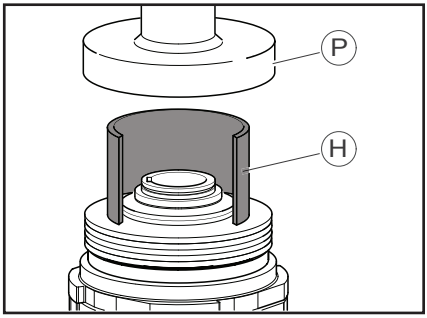
Fix the clutch (1) securely under the press (P).
Place the sleeve (H) on the plate spring (6).

Observe the Operating Instructions and accident prevention regulations of the press manufacturer!

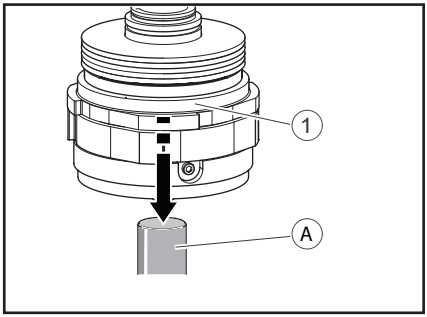
Compress the plate springs (6) with the sleeve (approx 54 kN) until the retaining ring (4) is no longer under pressure.



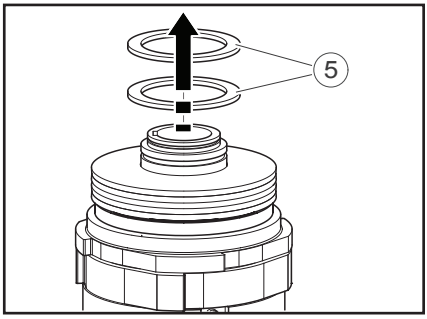
Remove the retaining ring (4).



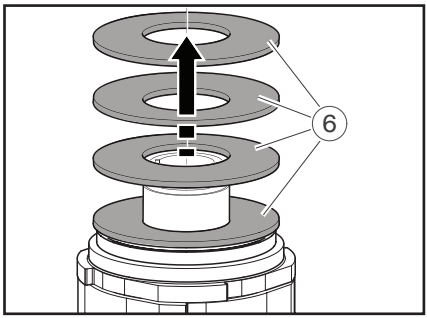
Release the press (P).
Remove the special tool (H).



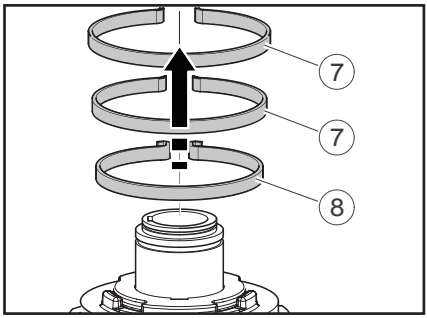
Fix the clamp arbor (A) in a vice and slide the clutch (1) onto the clamp arbor (A) with the flange side facing down.



Remove the supporting rings (5).



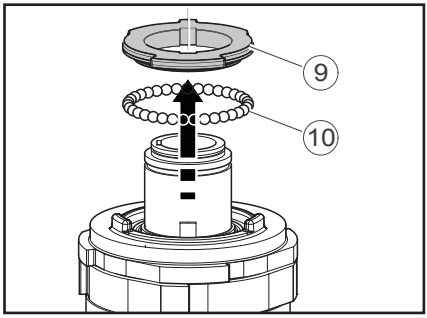
Lift off the plate springs (6).



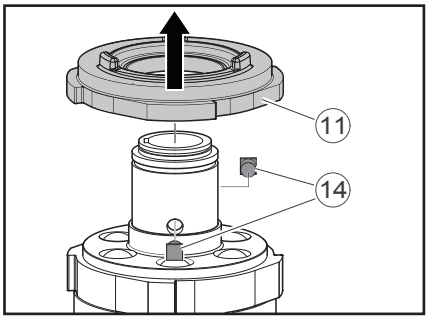
Remove the shifting springs (7 and 8), starting with the outer spring (7).

Caution

The springs (7 and 8) are under high pre-tension!
Observe the safety regulations.

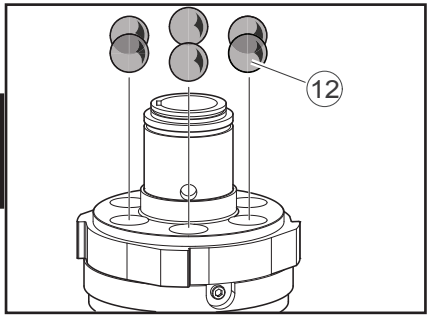


Lift off the shifting ring (9).
Remove the balls (10) and set them aside.

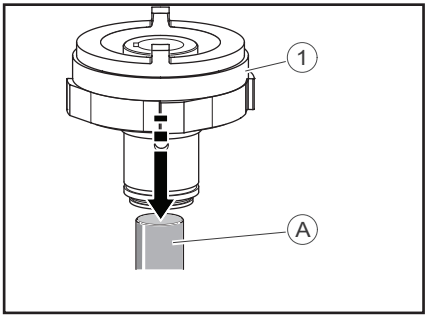


Remove the bolt (14).

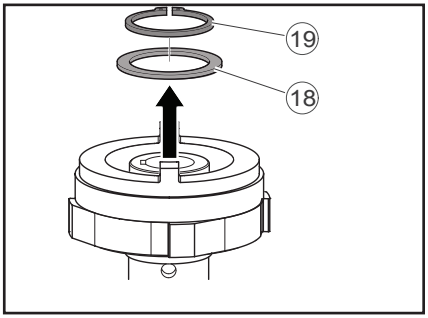
Remove the shifting plate (11).



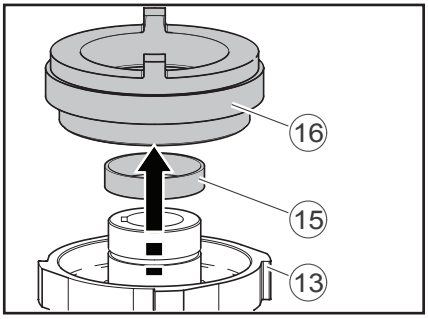
Remove the balls (12).



Rotate the clutch (1) through 180° and place it onto the clamp arbor (A).



Remove the retaining ring (19).
Remove the supporting ring (18).



Lift off the drive plate (16).
Pull the ring (15) off the hub (13).

Environment:

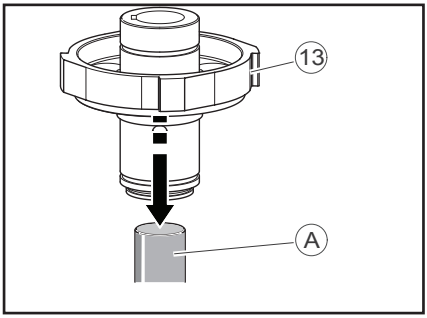
Lubricants get into the environment.

Environmental pollution:
Catch and store lubricants in suitable containers and dispose of them correctly.

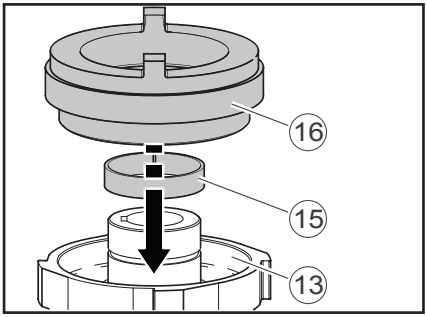
5.2 ASSEMBLY

Clean all parts, check them for damage, and replace them if necessary.

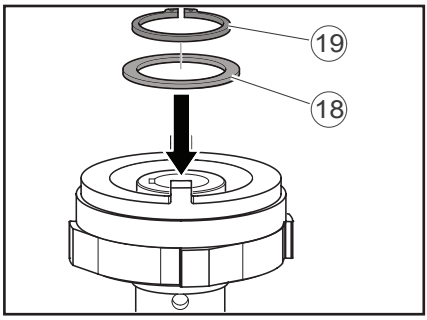
Re-grease all clutch parts prior to assembly.



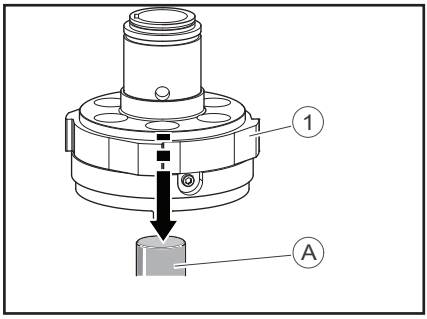
Place the hub (13) onto the clamp arbor (A).



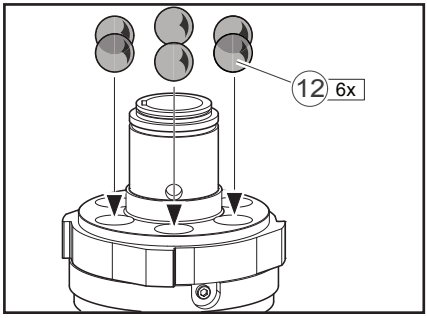
Slide the ring (15) onto the hub (13) up to the stop.
Fit the drive plate (16).



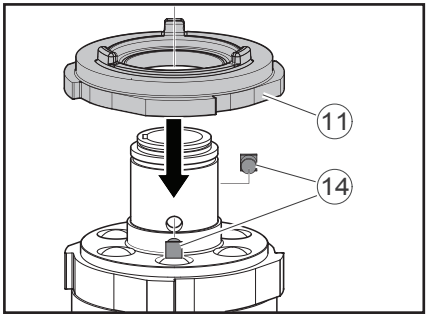
Insert the supporting ring (18).
Install the retaining ring (19).



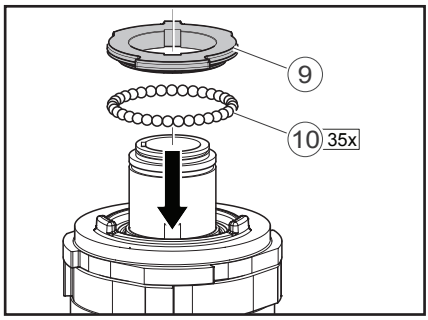
Rotate the ball-type cut-out clutch (1) through 180° and place it onto the clamp arbor (A).



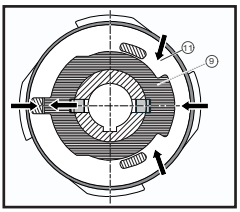
Insert the balls (12).



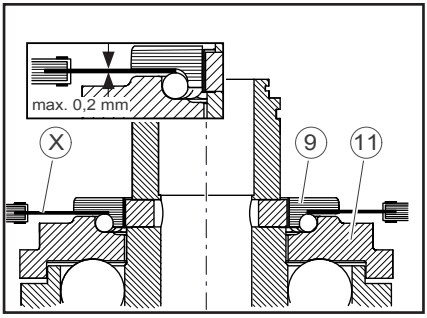
Fit the shifting plate (11).
Insert the bolt (14).



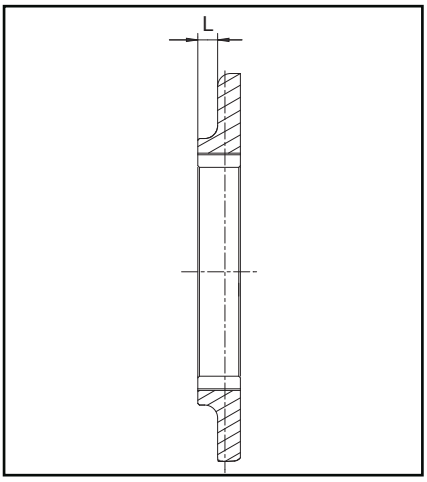
Insert the balls (10) into the greased race. Fit the shifting ring (9) in such a way that the dovetail sits between the stops of the shifting plate (11).



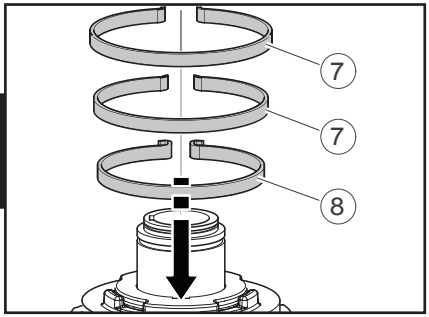
Check the shifting play of replaced components!



Determine the shifting play by pressing on the shifting ring (9) with your thumb while simultaneously lifting the shifting plate (11) with your index finger.
The shifting plate (11) must have a minimum play of 0.05 mm and a maximum play of 0.2 mm at two opposite positions.
Use two feeler gauges (X) for this purpose. Insert the feeler gauges between the shifting ring and the ball of the thrust bearing. If the shifting play is excessive or insufficient, other shifting rings must be used accordingly.



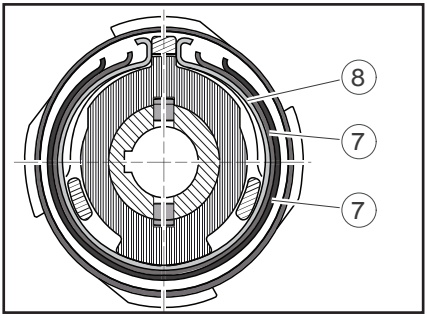
No.	colour	L [mm]
1	yellow	5,5
2	red	5,7
3	green	5,9
4	blue	6,1
5	white	6,3
6	black	6,5



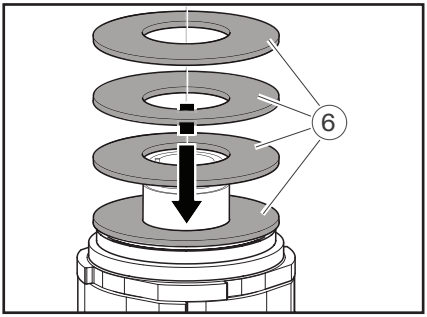
Fit the shift springs (7 and 8), starting with the inner spring (8).

Caution

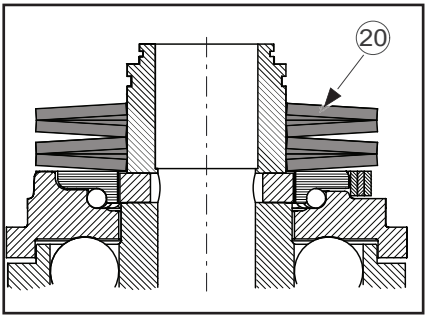
The springs (7 and 8) are under high pre-tension!
Observe the safety regulations.



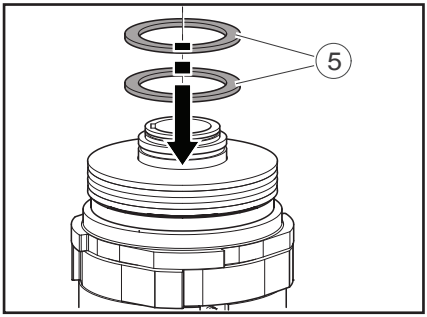
Pay attention to the installation position of the shifting springs (8 and 7).



Fit the plate springs (6) in the correct order.

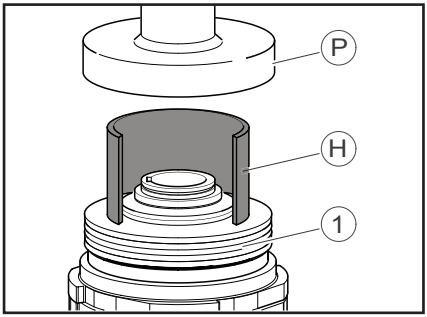


Pay attention to the installation position of the plate springs (6).



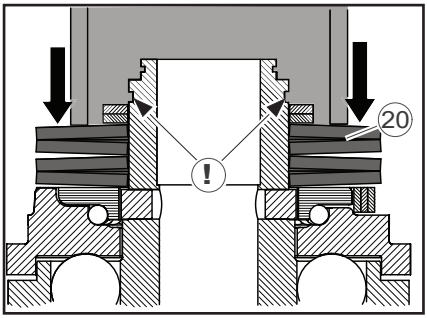
Insert the supporting rings (5).

If shims are used to set the play, attention must be paid to the installation position.
The shims must be fitted between the supporting rings (5).

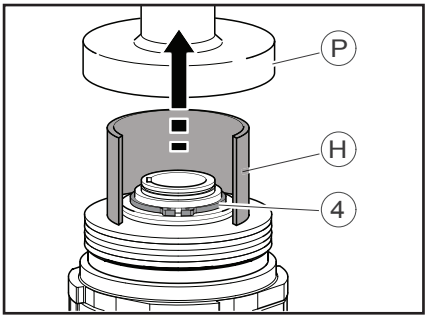


Fix the clutch (1) under the press (P).
Place the sleeve (H) on the plate spring (6).

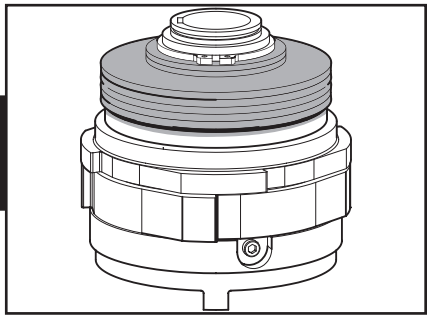
Observe the Operating Instructions and accident prevention regulations of the press manufacturer!



Press the plate springs (6) so far down (approx. 54 kN) that the groove for the retaining ring is exposed.

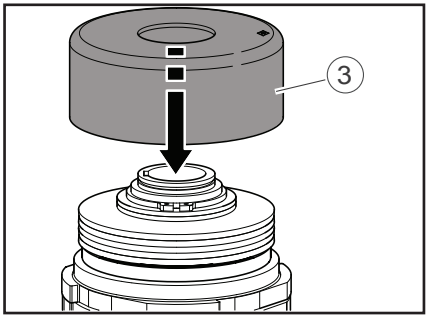


Fit the retaining ring (4).
Open the press (P) and remove the sleeve (H).
Remove the clutch.

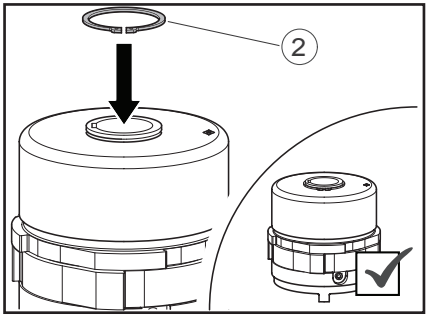


Place the clutch on the clamp arbor (A).

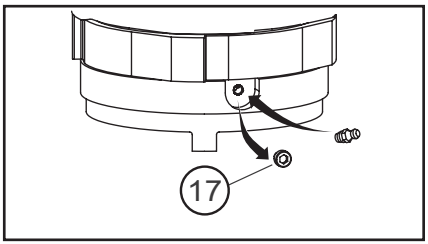
In addition to the basic greasing of the clutch, additionally lubricate the area of the plate springs with approx. 30 g grease.

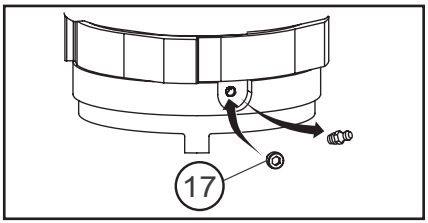


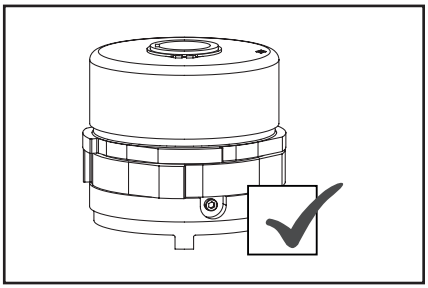
Fit the safety cover (3).



Fit the retaining ring (2).







Maintenance:
Grease clutch every 250 service hours (1x per season) with 20g. (max 10 strockes of grease). For this purpose remove bolt (17) and replace by lubricating nipple M6.

After greasing, remove lubricating nipple and plug bore with bold (17).

K62 cut-out clutches must be tested for the required torque at a speed of 2.5 rpm in the specified direction of rotation. The torque measured for each cut-out operation must be within the tolerance range specified for the clutch. Owing to the „running-in“ of the clutch, the first 10 cut-out operations are not included in the assessment of the actual clutch torque.

After „running-in“ the clutch, a minimum of 12 cut-out operations must be performed in order to determine the actual torque.

Should the torque be incorrect, proceed as follows: if the torque is too low, add corresponding shims between the two supporting rings (5); if the torque is too high, remove existing shims or replace them with thinner ones. The torque must subsequently be measured again.

WALTERSCHEID GMBH
Hauptstraße 150
D-53797 Lohmar. Germany
Tel: +49 2246 12-0
Fax: +49 2246 12-3501
www.walterscheid.com

Walterscheid
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